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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/927,828 | 08/10/2001 | Sheng-Yen Liu | CHIAO-001 | 6241 |

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09/08/2004

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Tustin, CA 92782

EXAMINER

TRUJILLO, JAMES K

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2116

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/927,828

Applicant(s)

LIU, SHENG-YEN

Examiner

James K. Trujillo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

1. The office acknowledges the receipt of the following and placed of record in the file:
2. Claims 1-19 are presented for examination.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the
 - a. “integrator” and “analog-digital converter” as per claim 2;
 - b. “starting a stand-by power supply when said battery reaches the pre-determined low electricity levels” as per claim 18;must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified

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and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 1, 5, 8 and 11 are objected to because of the following informalities:

a. As to claim 1:

- i. on line 7 of the claim, “deliver” should be changed to “delivers” for purposes of clarity.
- ii. on last line of the claim, “the high-power components” lacks proper antecedent basis. Therefore, it is suggested that “the high-power components”, on the last line of the claim, should be changed respectively to “high-power components”.
- iii. on last line of the claim, “the circuit” lacks proper antecedent basis. Therefore, it is suggested that “in the circuit”, on the last line of the claim, should be changed respectively to “connected to the data storage device”.

b. As to claims 5, 8 and 11, on line 2 of each of the claims, “the host” should be changed to “a host” because it currently lacks proper antecedent basis.

For examination purposes these changes will be assumed. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 1, 3-6, 10-13, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uskali, U.S. Patent 5,717,936.

7. As to claim 1, Uskali substantially teaches a data storage device comprising:

- a. an interface converter, for transforming an interface of a flash memory into an interface of dynamic random access memory (Uskali would have to have an interface converter because his system is able to store data both flash memory and dynamic random access memory and in some embodiments uses dynamic random access memory in place of what would normally be flash memory.) [figure 2, col. 1 lines 20-27 and col. 2 lines 32-36];
- b. a dynamic random access memory (memory 12 and/or 11), connected to said interface converter (not explicitly shown or described) for storing the data stored in said storage device [figure 2, col. 1 lines 20-27 and col. 2 lines 32-36];
- c. wherein, when said battery capacity detector detects said battery reaching a pre-determined low electricity margin, the residual electricity is save for said dynamic random access memory to operate the saving of the data and the high-power consuming components connected to the data storage device are stopped.

Uskali further substantially teaches a battery capacitor detector (power fail detector 50), for detecting the capacity of a battery connected with said data storage device and delivers a

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signal representing the battery capacity into a controller (with microprocessor system 30) [figure 2 and col. 3 lines 22-41].

In summary, Uskali substantially teaches all the elements of the claimed invention, however the battery capacitor detector of Uskali is not part the data storage device. That is, the only difference between the claimed invention and the teachings of Uskali is that the battery capacity detector of Uskali is not part of the data storage device.

It would have been obvious to one of ordinary skill in the art, having the teachings of Uskali before them at the time of the invention, to modify Uskali by changing the location of the battery capacity detector to the data storage device. Applicants have not disclosed that having the battery capacity within the data storage device provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to work equally well with the battery capacity detector not located on the data storage device because the function of the battery capacity detector is not affected by its location.

Therefore, it would have been obvious to one of ordinary skill in this art to modify Uskali to obtain the invention as specified in claim 1.

8. As to claim 3, Uskali as set forth hereinabove, taught the claimed digital storage device according to claim 1. Uskali further teaches wherein the digital storage device is further connected to a rechargeable battery to provide sufficient electricity [and col. 1 line 66 through col. 2 line 2 and col. 2 line 61 through col. 3 line 5]. Specifically, Uskali teaches that the type of batteries is immaterial to his invention, but discloses that his device may be used in an environment wherein the batteries are rechargeable. So even, if Uskali does not teach using

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rechargeable batteries it would have been obvious to do so because over a period of time rechargeable batteries save money.

9. As to claim 4, Uskali as set forth hereinabove, taught the claimed digital storage device according to claim 1. Uskali further teaches that the digital storage device is connected to a controller (microprocessor system 30) that is connected to a display device (display), a player (as is well known in PDAs), and a transmission interface (as is well known in PDAs, data terminal, personal computer), wherein said data storage device is used in a digital sound player (as is well known in PDAs and personal computers) [figure 2, col. 1 lines 7-11 and col. 1 line 64 through col. 2 line 2]. Specifically, Uskali teaches that his device may be used in other devices such as portable data terminals, PDAs, personal computers or any other such device for protecting memory items. Such devices have the recited limitations. Even if Uskali did not suggest so, it would have been obvious to use his digital storage device in an environment such as that of claim 4 because they would benefit from the advantages of Uskali.

10. As to claim 5, Uskali taught the data storage device according to claim 4 as described above. Uskali teaches wherein said transmission interface is connected to the host via a cable (as necessary for a data terminal, or as PDA for transferring data with host) [col. 1 lines 7-11].

11. As to claim 6, Uskali taught the data storage device according to claim 4 as described above. Uskali further taught wherein said display device is implemented using a liquid crystal display, a thin film transistor liquid display, or a light-emitting diode [col. 1 lines 7-11]. As is well known in the art PDA use liquid crystal displays.

12. As to claim 10, Uskali taught the data storage device according to claim 1 as described above. Uskali further taught wherein the data storage device is connected to a controller that is

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connected to a hard disk peripheral circuit, a display device, and a transmission interface, wherein said data storage device is used in portable hard disk (personal computer) [col. 1 lines 7-11]. Uskali suggests to those of ordinary skill that his data storage device may be used in a personal computer and even a portable personal computer. Personal computers have a hard disk peripheral circuit, a display device and transmission interfaces (such as for a printer).

13. As to claim 11, Uskali taught the data storage device according to claim 10 as described above. Furthermore, a personal computer normally uses cables the data storage devices with the host processor.

14. As to claim 12, Uskali taught the data storage device according to claim 10 as described above. Uskali further taught wherein said display device is implemented using a liquid crystal display, a thin film transistor liquid display, or a light-emitting diode [col. 1 lines 7-11]. As is well known in the art personal computers, especially those requiring battery power, use liquid crystal displays.

15. As to claim 13, Uskali as set forth above taught the limitations of claim 13. Uskali further taught displaying that the battery is running out of electricity [col. 1 lines 43-49].

16. As to claim 17, Uskali taught the data saving method according to claim 13 as described above. Uskali further taught wherein in determining if said battery reaches predetermined low electricity margin further comprises a step of starting (switching in backup battery power source) a stand-by power supply so as to prevent data from being lost due to lack of electricity [col. 4 lines 12-28]. Specifically, Uskali teaches that if the voltage level of the primary source is below a predetermined level a stand-by power supply will start to supply power to portions of the system.

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17. As to claims 18-19, they appear to recite limitations already addressed above. Therefore, Uskali teaches the claimed methods as described above.

18. Claims 2 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uskali and further in view of Mukainakano et al., U.S. Patent 6,445,162.

19. As to claim 2, Uskali as set forth hereinabove, teaches the claimed digital storage device according to claim 1. Uskali does not detail wherein the battery capacity detector comprises an integrator connected to a digital-analog converter so as to precisely calculate the residual electricity. Uskali does however suggest that the type of battery capacity detector used in his device may take any number of forms [col. 3 line 25].

Mukainakano teaches a battery capacity detector comprises an integrator (RC circuit) connected to a digital-analog converter so as to precisely calculate the residual capacity [col. 5 lines 1-15]. Mukainakano teaches that his battery capacity detector accurately detects the remaining battery capacity [col. 1 lines 52-64].

It would have been obvious to one of ordinary skill in the art, having the teachings of Uskali and Mukainakano before them at the time the invention was made, to replace the battery capacity detector disclosed by Uskali with the battery capacity detector as taught by Mukainakano resulting the claimed invention.

One of ordinary skill in the art would be motivated to make this combination in order accurately detect the voltage of the battery in view of the teachings of Mukainakano.

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20. As to claims 15 and 16, Uskali taught the claimed data saving method according to claim

13. Uskali does not describe the details of detecting the battery capacity. Specifically, Uskali teaches that the battery capacity must be detected.

Mukainakano teaches a battery capacity detector wherein the step of precisely detecting the battery capacity comprises a step of detecting the battery current and performing integration so as to obtain the ampere-hour capacity of the battery [col. 8 lines 42-65 and equations (5 and 6) in col. 8]. Mukainakano detects the battery capacity using an analog to digital converter [col. 1 lines 1-15].

It would have been obvious to one of ordinary skill in the art, having the teachings of Uskali and Mukainakano before them at the time the invention was made, to replace the battery capacity detector disclosed by Uskali with the battery capacity detector as taught by Mukainakano resulting the claimed invention.

One of ordinary skill in the art would be motivated to make this combination in order accurately detect the voltage of the battery in view of the teachings of Mukainakano.

21. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uskali further in view of Applicant's Admitted Prior Art (AAPA).

22. As to claim 7, Uskali taught the data storage device according to claim 1 above. Uskali does not expressly disclose wherein the data storage device is connected to a controller that is connected to a charged coupled device circuit and a transmission interface, wherein said data storage device is used in a digital camera for photographing. In summary, Uskali teaches that his data storage device may be used in any device where data is to be protected.

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AAPA teaches memories of a digital camera using a flash memory [page 1 paragraph 2].

The digital camera of AAPA stores data that is to be protected.

It would have been obvious to one of ordinary skill in the art, having the teachings of Uskali and AAPA before them at the time the invention was made, to modify Uskali by implementing the data storage device of Uskali in a digital camera such as that taught by AAPA.

One of ordinary skill would have made the modification because Uskali teaches that his data storage device may be used in any device that needs to protect memory and would benefit by conserving active battery life and preserving data [col. 4 lines 40-51].

23. As to claim 8, Uskali together with AAPA taught the data storage device according to claim 7 above. AAPA teaches a digital camera, which inherently has a transmission interface (for downloading data to a host such as a computer). Further a digital camera uses a cable to connect to a host (a computer for downloading data).

24. As to claim 9, Uskali together with AAPA taught the data storage device according to claim 7 above. Uskali together with AAPA teaches wherein said display device is implemented by using a liquid crystal display (LCD), a thin film transistor liquid display, or a light emitting diode. AAPA teaches a digital camera, which inherently has an LCD for displaying images.

25. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uskali in view of Tate et al., U.S. Patent 6,708,280.

26. As to claim 14, Uskali taught the data saving method according to claim 13 as described above. Uskali does not expressly teach wherein determining if the electricity state has continued for a certain period of time or has reached a lower state; and if yes stopping the whole operation.

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Tate teaches a method during the saving of data wherein if the electricity state has reached a lower level (amnesia level) stopping the whole operation [col. 4 lines 12-30]. Specifically, Tate teaches a system similar to those of Uskali. Tate teaches that if the electricity state gets too low most of the components of the system should be stopped and the memory saving should be stopped (memory should be erased), which avoids damage to the system.

It would have been obvious to one of ordinary skill in the art, having the teachings of Uskali and Tate before them at the time of the invention was made, to modify the system of Uskali to include determining if the electricity state has reached a lower level and if yes, stopping the whole operation as taught by Tate. One of ordinary skill in the art would be motivated to make this modification in order to avoid damage to the system in view of the teaching of Tate.

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 6,425,087 to Osborn et al. This patent teaches a method and apparatus for determining the energy capacity of a battery in a computer system.

U.S. Pat. No. 5,587,924 to Rossi. This patent teaches a system for determining the capacity of a battery.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James K. Trujillo whose telephone number is (703) 308-6291.

The examiner can normally be reached on M-F (7:30 am - 5:00 pm) First Friday Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on (703)308-1159. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James Trujillo
September 3, 2004

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